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PROTECTION OF OCEANS, ALL KINDS OF SEAS INCLUDING ENCLOSED AND SEMI-ENCLOSED SEAS, COASTAL AREAS AND THE PROTECTION, RATIONAL USE AND DEVELOPMENT OF THEIR LIVING RESOURCES

Report of the Secretary-General of the Conference

INTRODUCTION

1. By its decision 1/20 adopted at its first substantive session, the Preparatory Committee requested the Secretary-General of the Conference to submit a comprehensive report with recommendations for action covering 17 substantive areas, and to report progress on the tasks addressed to the International Maritime Organization (IMO), the Intergovernmental Oceanographic Commission (IOC) of the United Nations Educational, Scientific and Cultural Organization (UNESCO), the World Meteorological Organization (WMO), the United Nations Environment Programme (UNEP), and the Office for Ocean Affairs and the Law of the Sea of the United Nations Secretariat, on three specific topics: the London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, the global ocean observing system and land-based sources of marine pollution respectively. 1/

2. In preparing the present progress report, very valuable co-operation and documentation were received from relevant organizations, inter alia, UNEP, the Food and Agriculture Organization of the United Nations, IMO, IOC, WMO, the Office for Ocean Affairs and the Law of the Sea, the World Health Organization (WHO), the

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* See A/CONF.151/PC/13.

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International Atomic Energy Agency (IAEA) and the United Nations Industrial Development Organization (UNIDO), as well as relevant non-governmental organizations (NGOs) such as the International Council of Scientific Unions (ICSU), International Union for Conservation of Nature and Natural Resources (IUCN), the Environmental Defense Fund and Greenpeace International.

3. Present levels of environmental deterioration of oceans and loss of marine biodiversity are linked to development problems. Increasing pressures on coastal areas due to demographic and investment growth, marine degradation caused by inland human activities, lack of river-basin and integrated coastal planning, over-harvesting and illegal fishing of stocks in exclusive economic zones (EEZs) and the high seas and failure to protect endangered species all have negative political and socio-economic consequences. The inability of economic systems to cope with these problems at the same time as satisfying human needs indicates that a different approach is necessary. As the Preparatory Committee requested, there is a need to integrate in a single perspective the whole range of environmental, social, cultural and economic issues that could form the basis of a strategy to achieve the sustainable utilization and management of marine and coastal resources.

4. In an attempt to respond in an integrated manner to the various recommendations of the Preparatory Committee, subparagraphs 1 (a) to (r) have been regrouped into six individual sections to facilitate analysis and discussion, with the addition of three further sections to reflect the activities of certain United Nations agencies, as specified in decision 1/20. Collectively, these nine thematic sections address all the requests on oceans made by the Preparatory Committee at its first session, as follows:

(a) Mechanisms for capacity-building;

(b) Coastal areas development and enclosed seas;

(c) Marine pollution control strategies;

(d) Living marine resources;

(e) Impacts of climate change;

(f) International institutions and legal instruments;

(g) Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matters (London Dumping Convention, 1972) (IMO);

(h) Global ocean observing system (IOC);

(i) Protection of the marine environment from land-based sources of pollution (UNEP).

5. The present document reflects the status of preparatory work on the thematic sections identified above. Given that ocean and marine issues have close links with many of the other issues that the Preparatory Committee is addressing, steps have been to reflect the broader mandate of the Conference.

6. The main objective of the present report is to enable the Preparatory Committee to reflect on the various issues identified herein thereby providing ideas and guidance for the completion of the thematic sections and for ensuring the appropriate linkages between marine and coastal environmental management and development.

I. MECHANISMS FOR CAPACITY-BUILDING

A. Scope

7. This section addresses the mechanisms for building capacity for marine and coastal environmental management at the local, national and regional levels, both internally and through international assistance programmes. More specifically it covers the following items from paragraph 1 of decision 1/20:

(a) Establishment of mechanisms for endogenous capacity-building and human resources development, including measures to support the strengthening of the institutional capacities of developing countries to address ocean and sea-related issues;

(b) Measures to strengthen technical co-operation both between developed and developing countries and among developing countries, for the development and strengthening of capacities within developing countries for identifying, analysing, monitoring, managing and preventing environmental problems and for developing their natural resources in the pursuit of sustainable development;

(c) Measures to expand and strengthen national, regional and international data-gathering, evaluation and monitoring systems and information exchange mechanisms;

(d) Promotion of public awareness and education campaigns, inter alia, through NGOs, to foster a better appreciation of the problems facing the marine and coastal environment;

(e) Measures to strengthen regional, subregional and interregional co-operation programmes, including the UNEP Regional Seas Programme, which have proved effective and viable mechanisms in dealing, inter alia, with pollution-related problems.

B. Issues

8. The environmental problems of most areas of the world are growing much more quickly than the capacity of most countries to assess and resolve them. For historical and practical reasons the institutions dealing with ocean and coastal matters have been weak and sectoral. This is particularly a problem of the marine environment, since the sea is relatively inaccessible and requires special and often costly means to observe and understand it. Knowledge of the state of the marine environment and of marine processes is still inadequate for the management of marine resources. New approaches are needed for tackling these problems.

9. There is a world-wide need for new institutional capacity to tackle ocean-related issues in a manner that is consistent with the objectives of both environment and development. This is particularly true in developing countries where the need to bring about the sustainable use of available resources is essential for equitable growth and survival. The ultimate goal is to build national capacity to maintain or restore natural resource assets and the managerial skills to sustain it.

10. Any international approach to capacity-building needs to be guided by the following principles:

(a) The capacity needs to be developed nationally and in the long term to become self-sustaining;

(b) It needs to be based in the short term on international, regional and bilateral collaboration to ensure accelerated development, technology transfer and economies of scale;

(c) It needs to be developed only as fast as it can be used effectively;

(d) It requires sustained action over a long period.

11. Effective marine environmental management relies heavily upon the availability of sustainable human resources. It calls for research and monitoring by specialists in the marine sciences as well as managers able to combine scientific, economic, social and political considerations into plans and measures for integrated coastal zone and ocean management. Training to meet environmental requirements should reach down through all levels of the management structure concerned with ocean and coastal problems and even to the resource users. Major problems in developing countries include the lack of incentives for trained personnel to remain in their countries; the rapid turnover of trained personnel through promotion, which impedes the effective utilization of their expert[illegible]d affects the continuation of their activities; and the financial attraction of the private sector.

12. Effective marine environmental management also calls for the right kind of scientific and management infrastructures. All too often, it requires laboratories and other research facilities that do not exist now in many countries, or if they exist, are not properly maintained and supported. The data collected is often of poor quality, and there is a lack of adequate maintenance support for sophisticated instrumentation. The provision of boats, ships, diving facilities and other means of access for research and management is also a major requirement that is a significant problem for developing countries. In particular, personnel and facilities are needed for new techniques like remote sensing and geographical information systems (GIS). The management of any major component of the ocean and coastal environment also requires the capacity to collect and analyse data and statistics, to take management decisions based on the best data available, to apply management actions and enforce them on violators. Surveillance requires patrol boats, aircraft and fisheries and pollution analysis facilities. Economic and fiscal measures such as taxes and fines require personnel and methodologies for their application.

II. COASTAL AREAS DEVELOPMENT INCLUDING ENCLOSED SEAS

A. Scope

13. This section considers the specific management and conservation issues for coastal areas and enclosed seas, with particular reference to the following items from paragraph I of decision 1/20:

(a) Integrated management for the development of coastal areas and maritime zones under national jurisdiction, providing an appropriate balance between environmental and developmental requirements and, to this end, development of integrated management techniques, including environmental impact assessment;

(b) Means of protecting or rehabilitating living marine resources and their habitats, including mangroves and coral reefs, taking into account the ongoing work of UNEP towards a legal instrument on biological diversity and that of its Regional Seas Programme.

B. Issues

14. Coastal and marine areas are of vital economic as well as ecological importance. They support the majority of the world's population, with traditional artisanal and agricultural activities as well as modern industries. The risk of overexploitation of coastal resources through uncontrolled development is very high and substantial environmental degradation is already evident in many areas. This has led to ecological and economic problems, loss of development opportunities, political conflict and diminished living resources. Coastal zones will also be subject to possible sea-level rise resulting from global climate change. Consequences on coastal populations are difficult to forecast but could be significant. In any case, development pressures on coastal zones seem likely to intensify in the future as competition for limited resources increases. In the absence of appropriate policies and management procedures, it will not be possible to achieve sustainable development of coastal zones.

15. Historically, the problems of coastal and marine areas relate to demographic trends, poverty, migration, uncontrolled exploitation and competition for limited resources in pursuit of short-term economic interests. For many coastal areas, a major problem lies in the lack of land-use controls and the absence of resource allocation systems or planning. In addition, exploitation of renewable marine resources is frequently difficult to regulate and monitor. Biodiversity should be an issue of major concern, particularly in relation to criticial habitats for endangered species. The concept of large marine ecosystems will be examined more fully in the final document.

16. All too often coastal and marine problems are aggravated by development activities taking place inland. In particular, river water quality is degraded through agricultural practices, domestic effluents and industrial discharges and is a significant influence upon the quality of coastal waters and enclosed seas. Enclosed and semi-enclosed seas are particularly vulnerable because they are often shallow and characterized by slow rates of water renewal.

17. For planning purposes both coastal and maritime areas, which include EEZs, should be considered as a whole in view of their functional, biophysical and socio-economic interrelationship. Coastal zones can be defined as including both the tributary river basins and the whole of the EEZ. More realistically, however, they are frequently considered to be rather more confined areas within which most important influences can be controlled. In the case of small island countries, for example the whole country may be included in a single plan. Integrated management of coastal and marine areas is now recognized as a necessary tool for development and environmental protection. It relies on modern methods of planning and resource management as well as interdisciplinary expertise and involves the setting of national policies and goals; inventories of resources and available statistics; identification, selection and implementation of management systems such as guidelines, permits and economic incentives; socio-economic and environmental assessment; conflict resolution techniques; land-use planning; enforced zoning and protection of sensitive areas. Unfortunately, the present structure of most Governments, involving many separate sectoral ministries, each responsible for some aspect or activity in the coastal and marine areas, is not always conducive to such integrated action.

18. It is evident that appropriate levels of financial and technical support are required to facilitate improved coastal zone management as a matter of urgency.

III. MARINE POLLUTION CONTROL STRATEGIES

A. Scope

19. This section covers the following items of paragraph 1 of decision 1/20:

(a) Establishment, as appropriate, of early-warning systems for oil-spill and hazardous chemical substance emergencies and of mechanisms for notification and for mobilization of appropriate assistance on request in such cases;

(b) Promotion and application of the precautionary approach as appropriate, and use of incentives and disincentives to promote clean production methods to combat marine pollution;

(c) Effectiveness of national, regional and international efforts to deal with marine pollution from all sources and of measures in support of those efforts, including:

(i) Development of national port infrastructure for the collection and disposal of wastes;

(ii) Measures to strengthen or establish facilities for waste and used-water treatment.

B. Issues

20. Sources of marine pollution related to shipping activities and the management of substances and wastes are examined here. About 70 per cent of the substances and wastes contaminating the marine environment are from land-based sources. A comprehensive framework for protection of the marine environment would require the integrated management of many human activities, and may involve fundamental changes in current patterns of social and economic development, as well as a policy-making strategy aimed at ensuring the sustainability of human activities and the natural systems that support them.

21. Since the 1972 Stockholm Conference on the Human Environment, a number of regional and global legal instruments have been developed to control the ship- and land-based discharge and dumping of substances that could pollute the marine environment. As yet, these instruments have not been linked in a cohesive and integrated manner that would enable issues such as the destruction of coastal habitats, land-use and atmospheric and riverine inputs to be tackled effectively. The recent review of the state of the marine environment reveals major regional differences and the predominance of pollution in coastal areas. There is clearly still much to be done in implementing the provisions of regional agreements on marine pollution prevention particularly with regard to land-based sources of substances and wastes, riverine inputs and coastal development. In many cases, such as in the development of national port infrastructure for the collection and disposal of wastes, the main obstacle to progress is financial rather than technical. Improved implementation of measures to prevent pollution by maritime shipping activities is also required. The effectiveness of regional agreements and bilateral arrangements between Governments and industry to enable a rapid response to accidents involving ships and to combat ensuing environmental threats are constrained by available resources and capabilities. For countries that lack the necessary material resources and trained human resources, the agreements are consequently of limited use. Initiatives to improve this situation include the recently adopted International Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC Convention 1990) which contains a mandatory requirement for oil pollution emergency plans, sets out basic principles on the reimbursement of costs of assistance and facilitates technical assistance. In addition, work is in hand to develop a new convention on liability and compensation in connection with the carriage of hazardous and noxious substances by sea that will complement agreements already in place on oil pollution damage from laden tankers.

22. The precautionary approach is important in managing human activities that lead to environmental contamination. Precautionary measures should be seen as an aid to, rather than a constraint upon, social and economic development. Controlling contaminants at source leads to greater efficiency of production and reduces the cost of managing or restoring impacted environments. However, rational use of marine and other environments for the benefit of society cannot preclude contamination entirely. For this reason, priority needs to be given to controlling substances that, on the basis of scientifically derived criteria, present significant risks to human health and the environment.

23. Although marine pollution has regional and oceanographic dimensions, its origin is invariably on land and is strongly influenced by patterns of human

settlements and activities. Degradation of the marine environment can result either from a lack of, or an excess of, economic, social and industrial growth. In accordance with its original and restricted brief, the report looks at elements of marine pollution control that relate to the management of substances and wastes in general. It does not focus on categories of materials that, for various reasons, present particular problems for environmental managers. Undoubtedly a problem of global importance, highlighted by the 1990 report on the state of the marine environment by the Joint Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP), is management of the very large quantities of human sewage generated by populations in coastal areas. The potential economic, human health and environmental implications of the continuous and inevitable production of sewage are to a great extent a function of the methods and technologies available for its treatment and/or disposal. Few options are practical for implementation in every urban, geographic and socio-economic context: no option is devoid of environmental impact.

24. Similarly, it may be appropriate to integrate certain aspects of the management of substances described in this report into a special, non-sectoral document that deals with substance-risk management since this is a matter of significance in all parts of the environment.

IV. LIVING MARINE RESOURCES

A. Scope

25. This section covers the following items from paragraph 1 of decision 1/20:

(a) Pollution-related problems and status of living marine resources in all marine regions, including specific seas and polar regions, as appropriate;

(b) The effectiveness of existing international institutions, the effectiveness and status of implementation of existing legal instruments and the identification within appropriate forums of gaps in existing mechanisms for the protection, rational use and development of living marine resources, including the living resources of the high seas, taking into account the results of the 1984 World Conference on Fisheries Management and Development as well as the Third United Nations Conference on the Law of the Sea;

(c) The impact of large-scale harvesting and new fishing technologies and fishing technologies incompatible with the sustainable management of living marine resources, taking into account General Assembly resolution 44/225 of 22 December 1989 on large-scale pelagic drift-net fishing;

(d) Appropriate measures for the conservation, rational use and sustainable development of the living resources of the high seas and the protection of their ecosystems;

(e) Updating of studies on the status from 1972 onward, of whales, other marine mammals and any endangered marine species.

B. Issues

26. The state of the marine environment in coastal areas and enclosed and semi-enclosed seas is declining rapidly or is already severely degraded. This is in contrast to the open ocean. The stress is indicated by increases showing up in algal blooms, coral bleaching, epidemics, the spread of exotic species and the decline in the quality of marine food resources. The causes include pollution (mostly from land-based sources), inadequate or poorly planned coastal development, destruction of habitats valuable as breeding and nursery grounds, materials extraction and downstream impacts of land-use changes and damming and diversion of rivers inland.

27. Marine biological diversity is still poorly understood, but is clearly being affected by habitat destruction, pollution and the introduction of alien species into many parts of the marine environment. Biotechnology is also becoming increasingly important through the genetic improvement of aquaculture species and the growing number of pharmacologically active products found in marine organisms. Problems include the use of destructive fishing techniques, high incidental catch of non-target species, difficulties in managing shared stocks and those fished both artisanally and commercially and inability to collect adequate data from high-seas fisheries or to control overexploitation. Living marine resources such as coral reefs, mangroves, seagrasses and marine mammals are important in themselves and valuable resources for tourism and recreation, coastal protection and erosion control. Such values needs to be considered in their management and use. An update of the status of marine mammals and other endangered species is necessary for effective measures of conservation. Exploitation of living marine resources implies that some level of impact is acceptable. The criteria for deciding such levels should include equity, sustainability and the reversibility of any impact.

28. Forecasts of the possible effects of climate and sea-level change on living marine resources are still uncertain. Major changes in marine biological activity as a whole are unlikely but abundance and location of resources may change, affecting food security for coastal populations, and plankton and other marine life may be vulnerable to increasing ultraviolet radiation from ozone depletion. Marine biomass in the sea is also a major carbon sink and needs to be protected.

29. Fishery resources are now fully or overexploited nearly everywhere, in developed as well as in developing countries. Coastal fishery catches are now close to the maximum possible yield. High-seas resources are either untouched, when economically or technologically inaccessible, or severely depleted. Large whales are depleted and considered by some to be on the verge of extinction, although protective measures are in place. The state of some other marine mammals is also serious and the risks to their survival are not yet adequately well known and therefore controlled. For example, protection is inadequate for turtles and certain other endangered marine species. Sharks may also be at risk as few shark fisheries have lasted more than a few years.

30. Coastal and artisanal fisheries are particularly important, providing labour and food for billions of people but they are vulnerable to coastal degradation and overfishing as populations increase and all too often traditional management

systems have broken down and not been replaced. Fisheries (including aquaculture) should be sustainable. Sustainable development in fisheries should conserve the environment and the genetic resources. It should be technically appropriate, economically viable and socially acceptable. Aquaculture can increase fisheries productivity but may have its own environmental impacts.

31. International collaboration in fisheries management has developed tremendously during the last half century and many conventions and other international instruments have been established. The Law of the Sea Convention has led to the adoption of EEZs that given coastal States sovereign rights over all fishing. This section reviews the existing international legal instruments such as the United Nations Convention on the Law of the Sea, the efforts of FAO through its Fisheries Commissions and other co-operative arrangements and programmes such as the UNEP programmes and those of the International Whaling Commission. Furthermore, there is growing desire amongst certain Antarctica Treaty members and the world community to preserve the unique ecosystems and living resources of Antarctica. Specific proposals have been tabled on how to achieve this goal.

V. IMPACTS OF CLIMATE CHANGE

A. Scope

32. This section covers the following items from paragraph 1 of decision 1/20:

(a) Linkages between oceans and seas and the issues of possible climate change and biological diversity;

(b) The impact of possible climate change on small island ecosystems and vulnerable coastal areas.

B. Issues

33. The capacity of the oceans for storing and releasing large amounts of energy means that the oceans have considerable influence on local, regional and global climate. The ocean/atmosphere relationship and feedback mechanisms therefore need to be taken fully into account in the climate change issue. Expected climate changes such as rising temperatures and sea-levels as well as more frequent storms and other catastrophic events will take their toll on resource abundance and distribution, resource variability, fisheries and coastal activities such as aquaculture. However, the behaviour of the oceans will be understood only through an interplay between modelling and observation. Much of the information currently collected on atmospheric climatic and oceanographic conditions is for meteorological and oceanographic purposes in selected regions only. The nature and geographical coverage of this information is not adequate for assessing, predicting or modelling the effects of climate change on the oceans and coastal areas. And since modelling depends on comprehensive data sets covering very large areas of the oceans it is important to identify and fill the gaps as soon as possible. Variability in phytoplankton and zooplankton production, induced by climatic

variation, is documented for several regions along with the associated impact on fisheries and productivity. The role of the oceans in animal and seaweed distributions - biogeography - is also important. Generally, the sensitivity of marine ecosystems to the possible effects of climate change is poorly understood, especially regarding likely impacts on wetlands, coral reefs and seagrass. There might be major shifts in marine fisheries and stresses and changes in coastal ecosystems, for example, with possible benefits to some countries and major losses for others. Further work is needed in this area.

34. The rapid growth of coastal human settlements has lead to radical and often irreversible alteration of natural coastal ecosystems and extensive pollution of the seas. In some countries the management of these problems will be further complicated by any substantial projected rises in sea-level, changed paths of tropical or extratropical storms and associated storm surges and oceanographic wave statistics. The impact of potential climate changes will also tend to exacerbate the disparities between rich and poor countries because for example, many developing countries such as small island States and densely populated low-lying States are especially vulnerable to sea-level change and related phenomena. The scale and significance of this problem needs to be evaluated, drawing on analyses from the UNEP/WMO Intergovernmental Panel on Climate Change (IPCC) and the various UNEP/IOC regional task teams already established and taking account of other active marine and coastal zone research programmes (FAO, UNESCO and the International Council of Scientific Unions (ICSU)) and agencies dealing with marine resource development (FAO). In extreme cases, some island States could lose all of their national territory and millions of people could become environmental refugees. Many of the countries concerned have contributed little if anything to the cause of these problems.

35. Additional agreements and arrangements at regional level are essential to provide reliable regional assessments, predictions and risk-evaluations of climate change impact and to facilitate and expedite the work of IPCC. Full collaboration with national authorities, regional bodies and international agencies dealing with development is required.

VI. INTERNATIONAL INSTITUTIONS AND LEGAL INSTRUMENTS

A. Scope

36. This section concerns the following item of paragraph 1 of decision 1/20: The effectiveness and feasible strengthening of existing international institutions, the effectiveness and status of implementation of existing legal instruments and the identification of gaps in existing mechanisms for the protection of the marine environment.

B. Issues

37. The underlying unity of the ocean requires effective global management régimes. Several bodies within the United Nations system are already actively engaged in the protection and preservation of the marine environment at global as

well as regional levels. The United Nations was responsible for convening the two major conferences that laid down the basic principles and established the most comprehensive global framework for the regulation of the conduct of States and for further actions by the international community, i.e. the 1972 Stockholm Conference on the Human Environment and the Third United Nations Conference on the Law of the Sea, which adopted in 1982 the United Nations Convention on the Law of the Sea.

38. As a shared resource, many regional seas require regional forms of management. Several groups of States have already adopted legal instruments and have created institutions dealing with the protection and preservation of the marine environment in particular regions or seas. UNEP's Regional Seas Programme provides support for these efforts. Other groups have taken similar steps to protect and preserve the enviroment of the polar regions, particularly Antarctica and the southern ocean.

39. As a result of these global and regional efforts, there is now a considerable body of legal instruments - conventions, agreements, declarations of principle, standards, guidelines, etc. - governing the conduct of States and human activities. A review of relevant multilateral conventions and other major instruments as well as the summary of activities of relevant institutions will be prepared with the final version of the thematic material.

40. While many conventions and agreements are in force, not all of them are being implemented in a satisfactory manner and some have not attracted the desired number of parties or have not entered into force for lack of sufficient ratifications. On the other hand, important provisions in some conventions and agreements have been implemented by States even before they have formally entered into force, and non-binding instruments have also been effectively implemented. However, even if all of these instruments were implemented satisfactorily, there would still be major gaps that will be analysed.

41. It is widely recognized that the management and development of ocean resources must be based on a holistic understanding of the system. Historically, however, the management of sectoral activities affecting the oceans (tourism, fisheries, defence, navigation, oil, etc.) have been approached in a piecemeal rather than in an integrated way. The problem is therefore to find ways to reconcile the need for a holistic view of the oceans (with a view to drawing up global ocean policies) with the pragmatic constraints imposed by the management of sectoral activities. Particular difficulty arises with the integration or effective co-ordination of data collection, as well as with monitoring, research, decision-making and management at the level of the sectoral activity, the EEZ, region or ocean and globally. This issue clearly requires careful examination to evolve effective integrated and sustainable approaches to management and development.

VII. LONDON DUMPING CONVENTION

A. Scope

42. In paragraph 2 of decision 1/20 the Preparatory Committee invited IMO, in co-operation with the States parties to the London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (the London Dumping Convention) to consider initiating work to strengthen the régime curbing dumping at sea, taking into consideration the Bergen Ministerial Declaration on Sustainable Development and the outcome of the deliberations of other regional commissions in preparation for the United Nations Conference on Environment and Development. The Preparatory Committee may now wish to discuss the challenges raised by and the issues identified in the document 2/ prepared in response to that invitation.

B. Issues

43. The document describes the extent to which dumping currently occurs, the steps taken by contracting parties to implement the Convention, the problems that remain to be dealt with and endeavours under way to enhance the effectiveness of the Convention.

44. It also refers to the establishment by several contracting parties of programmes for phasing out disposal at sea of industrial wastes and sewage sludge (as a consequence of alternative treatment and disposal methods having been developed), and the agreement reached at the Thirteenth Consultative Meeting that the dumping of all industrial wastes excepting those of an inert character should be terminated by 31 December 1995. The Meeting had further agreed that a global survey of hazardous wastes should be conducted with a view to preparing a comprehensive study by autumn 1992 on the effectiveness, environmental acceptability, costs and benefits of land-based alternatives to waste dumping and incineration at sea.

45. The document lists a number of ongoing and future tasks faced by contracting parties to improve the implementation of the Convention and enhancing its status and membership, including:

(a) Development of procedures for the assessment of liability regarding dumping at sea;

(b) Clarification of the responsibilities and rights of coastal States to apply the Convention in a zone adjacent to their coasts;

(c) Guidance on measures to be taken to prevent and punish conduct contravening the provisions of the Convention;

(d) Improving the flow of information on techniques and practices of relevance to the Convention, e.g. technologies and analytical tools for evaluating waste reduction/disposal alternatives;

(e) Identification of funding for technical assistance to less developed States parties to the Convention;

(f) Better liaison with regional organizations concerning the prevention of marine pollution and the establishment of regional instruments on dumping.

VIII. GLOBAL OCEAN OBSERVING SYSTEM

A. Scope

46. In paragraph 3 of decision 1/20 the Preparatory Committee invited UNEP, IOC and WMO to study ways and means of strengthening observation systems to protect oceans, inter alia, through the establishment of a global ocean observing system (GOOS). The Preparatory Committee may now wish to discuss the issues identified by the preparation of a response to that invitation.

B. Issues

47. A one metre rise in sea-level could affect all land up to five metres in elevation. A total of 5 million km^2 is at risk, representing 3 per cent of the world's total land, one third of global cropland and home to 1 billion people. Although no comprehensive studies have been undertaken, site-specific studies suggest that incorporating projections of sea-level rise and other environmental changes into land-use planning can save significant amounts of money. In addition, land-use policies, building codes, etc., can be modified if adequate long-term predictive information is available. Oceanographic monitoring for pollution control purposes, commercial fisheries development and meteorological forecasting can result in tangible economic benefits. Such steps would also permit integrated national coastal zone management activities to balance conservation with development needs.

48. The protection and increased use of marine and coastal environments should be based on comprehensive observations as well as on a sound, scientifically based understanding of marine ecology, of the relevant ocean processes and their interaction with terrestrial and atmospheric systems. Long-term systematic monitoring of changes in the state of the marine and coastal environment, as well as of their interaction with atmospheric and terrestrial processes, should follow a globally co-ordinated strategy. Similarly, strategies on environment and development need to be examined, formulated, and established taking into account the role of the ocean in potential global climate change.

49. GOOS is a proposed network of national, regional and global programmes that embraces research, observation and data management related to oceanic conditions and processes. GOOS is designed and planned as a component of a global climate observing system and as a part of a global system for monitoring and predicting climate and environmental change. It will incorporate all major physical, chemical and biological properties and provide a basis for monitoring marine ecosystems as a prerequisite for management of ocean uses, especially in coastal zones. It will

support fisheries management, shipping, pollution studies, weather forecasting and coastal zone management, initially emphasizing the upper ocean and the coastal ocean.

50. The need for an integrated and comprehensive system of ocean observation has been recognized by a wide variety of agencies, organizations and international forums (e.g. the United Nations General Assembly, IOC, WMO, IPCC, the Second World Climate Conference in consultation with ICSU and its international scientific unions committees and programmes). Accordingly, GOOS has strong support at international level.

IX. CONTROL ON LAND-BASED SOURCES OF MARINE POLLUTION

A. Scope

51. In paragraphs 4 to 6 of decision 1/20, the Preparatory Committee:

(a) Invited UNEP, in co-operation with relevant organizations of the United Nations system, including the Office for Ocean Affairs and the Law of the Sea of the United Nations Secretariat, to consider making an evaluation of proposals for the further development of scientific, technical and financial co-operation for the protection of the marine environment from land-based sources of pollution;

(b) Requested the Secretary-General of the Conference to follow closely the work of the intergovernmental meeting of experts to be held in Canada in the first half of 1991, in co-operation with UNEP, IOC and the Office for Ocean Affairs and the Law of the Sea of the United Nations Secretariat, to develop general principles for the protection of the marine environment from land-based sources of pollution and, as appropriate, to report on the results of this meeting relative to the work of the Conference to the Preparatory Committee at its third session;

(c) Invited UNEP, in co-operation with relevant organizations of the United Nations system, to consider undertaking an evaluation of the 1985 Montreal Guidelines for the Protection of the Marine Environment from Land-based Sources of Pollution, where appropriate, taking into consideration existing regional arrangements.

B. Issues

52. The invitation of the Preparatory Committee highlights the concern of Governments that land-based sources of pollution and related activities with effects on the coastal and marine environment are the major threat to the oceans today and are producing a significant impact on coastal areas and enclosed and semi-enclosed seas as documented in the recent GESAMP report on the state of the marine environment.

53. The coastal zones, including both the territorial sea and adjacent land affecting and affected by the marine environment and extending in certain respects

to the 200-mile limit and inland to drainage basins and watersheds draining into coastal waters, are areas of critical importance to human activities. The seas are also the disposal ground for many wastes and the ultimate sink for many of the products of human activity. Control of land-based sources of pollution is thus critical to the future of this major component of the ocean system. Coastal zones include parts of the ocean or sea areas under national jurisdiction not covered by the law of the sea. The prerogatives of national sovereignty need to be reconciled with the requirements of international responsibility for ocean resources and capacities that know no national frontiers. This makes the control of land-based sources of marine pollution difficult but it is also vital to environmental protection and the sustainable development of its resources.

54. Given the present uncertainty of the impact of many anthropogenic substances in the marine environment, and the risks they may present to important resources, precautionary approaches are clearly needed in determining the amounts of many substances that should be allowed to enter the oceans and the priorities for the implementation of control measures. There are several important linkages between land-based sources of marine pollution and coastal areas development; marine pollution control strategies; and international institutions and legal instruments.

55. The elements to be addressed include evaluations of:

(a) Proposals for the further development of scientific, legal, social and economic measures for the protection of the marine environment from land-based sources of pollution;

(b) General principles for the protection of the marine environment from land-based sources of pollution;

(c) The 1985 Montreal Guidelines for the Protection of the Marine Environment from Land-based Sources or Pollution;

(d) Integrated management for the control of land-based activities and sources of marine pollution.

56. Given the diversity of the nature and sources of pollutants originating on the land, many different types of action will be needed covering all discharges including point and non-point sources, river outflows and materials transported through the air and then precipitated into the sea. Investment for separating different types of wastewater to facilitate their disposal, treatment or reuse should be developed. Action will also be required for the treatment and disposal of human wastes and discharges from agriculture, forestry, aquaculture, industry and human settlements, as well as the effects of changes in land use, the development of coastal areas, the alteration and management of watersheds and river basins.

57. UNEP is preparing an evaluation at the 1985 Montreal Guidelines on land-based sources of marine pollution. In consultation with the other appropriate agencies, UNEP is also preparing a brief outline of strategy options or actions to reduce the effects of land-based sources of pollution and other activities threatening marine

and coastal resources, ranging from better implementation of present arrangements to national and regional actions as well as international mechanisms for improving technical and financial support, preparation of more specific, updated and practical guidelines, and a possible international framework convention for the protection of the marine environment from all sources of pollution.

58. Canada will host an Intergovernmental Meeting of Experts on Land-based Sources of Marine Pollution (Halifax, Nova Scotia, 6-10 May 1991) in co-operation with the UNCED secretariat, UNEP, IOC, the Office for Ocean Affairs and the Law of the Sea (OALOS) and other interested United Nations agencies (see also para. 78 below).

X. POTENTIAL AREAS FOR ACTION

59. The Preparatory Committee may wish to begin by considering the following potential action areas, which will be examined in greater detail in the final version of the thematic material and in the light of the guidance provided by the Committee. Based upon the issues raised in the present report, nine key areas requiring action have been so far identified.

60. For the third session of the Preparatory Committee it is suggested that a strategic synthesis document could be prepared, which would identify the needs and available options for building a global framework and a strategy for action aimed at bringing about the conservation and sustainable use of marine resources and the integrated management of oceanic and coastal systems. The synthesis document would be supplemented as necessary by the completed thematic material, with cross-reference to the pertinent actions and proposals of other working parties and issues of the UNCED process.

A. Regulatory, administrative, financial and institutional systems at the national level

61. The formulation of appropriate economic and financial policies is clearly needed at appropriate scales to encourage the development of national capacities. There is also a need for self-financing projects. The following types of action could be envisaged:

(a) Awareness of the role of the environment in economic activities in coastal and ocean areas needs to be promoted at all organizational levels ranging from politicians, managers, sectors (State and private) to the general public. This should be linked with increased financial contributions for environmentally sound projects generated by the private and public sector. In the process of policy formulation and implementation, the interests of all sectors and interest groups should be taken into account as a prerequisite for their effective co-ordination;

(b) The need for environmentally sound development needs to be reflected in pricing, taxing and trading policies, the business and financial sectors, local administrations and national budgets through economic strategies and policies

including incentives and disincentives to control and prevent pollution. The "user pays" principle could be applied to finance the protection and rehabilitation of ocean and coastal environments, together with the provision of appropriate economic incentives and disincentives;

(c) It is necessary to identify suitable funding sources and to promote proper funding procedures at the national level (e.g., fees, fines, taxes, rents). Programmes with some continuity are preferable to project-by-project approaches. Donors need to take into account the financial requirements of medium- or long-term projects and consider adjusting their financial cycles;

(d) Sources of financing for pre-investment activities (environmental impact assessment, research, etc.) have to be identified and obligations suitably distributed among donors such as national banks and financing agencies.

62. There is clearly a need to develop approaches involving integrated coastal and marine environmental management within a single policy framework. Among the main structural changes needed to bring this about would be:

(a) National and regional frameworks to promote integration, co-ordination and communication. Existing national and local institutions need to find effective means of ensuring interministerial and intersectoral co-ordination at the appropriate executive levels with a minimum of extra bureaucracy and cost;

(b) The existing capabilities of universities, research institutes and development bodies need to be effectively harnessed and if necessary, restructured to increase their capabilities for providing environmentally sound advice on the development of coastal and ocean areas and for their effective participation in national and international programmes;

(c) New environmentally appropriate legislation needs to be drafted dealing with coastal and marine issues, and assistance provided in implementing existing conventions, including the United Nations Convention on the Law of the Sea, and in strengthening legal provisions and promoting legal co-ordination of national legislation;

(d) The planning of coastal and marine development and ocean activities needs to include a broader environmental dimension through the use of impact assessment, cost-benefit analysis and national accounting of natural resource values. Bilateral assistance agencies need to review their strategies to fulfil these requirements.

B. International and regional agreements and action plans

63. Participation in international and regional legal agreements and programmes can reinforce national capacities and strengthen co-operation among participants. Mechanisms need to be established to foster technical co-operation among developing countries in coastal and marine planning and management. Regional action plans and co-ordinating mechanisms can build networks through which regional priorities and

actions can be identified and executed. The involvement of developing country experts in regional programmes, international meetings and co-operative activities can broaden their experience and improve their credibility and effective capacity to contribute to decision-making.

64. New international sources of financial support are becoming available, including infrastructure support from the development banks. Bilateral or multilateral co-operative projects related to marine and coastal development or resource exploitation should include capacity-building as an integral part of project costs. Bilateral and multilateral banks and aid organizations need to be prepared to provide increased assistance for institutional development, some of which should go to community groups and NGOs, universities and research centres. Long-term co-operation on technology transfer and on building the capacity to evaluate suitable technologies is essential. Programmes with some continuity are preferable to single projects.

C. Data, training, education and public awareness

65. Environmental data to be collected need to be selected according to their relevance to the management or development problems of concern and presented in forms that facilitate their full consideration in the decision-making process. Existing data need to be used in a more efficient way, with emphasis on quality assurance, analysis and interpretation.

66. Mechanisms for information exchange are needed to make a more effective use of the large volumes of information available. Databases for both existing and new information need to be strengthened and consolidated. Integrated information systems, such as the geographically referenced databases, coastal degradation indices and techniques monitoring the coastal habitats and resources need to be developed and applied.

67. National research capacities need to be developed by strengthening the facilities and expertise of marine and other research laboratories.

68. Information systems need to be established for coastal and high seas resources. The state of important coastal habitats needs to be monitored to alert Governments to the rate of loss of significant resources and to stimulate corrective action. Large-scale marine ecosystems need to be defined and techniques developed for their management. Existing central statistical systems to collect and analyse catch data from coastal and high seas fisheries need to be strengthened.

69. Coastal and marine educational curricula should cover coastal areas and oceans. Public awareness campaigns are needed to improve understanding of the significance of coastal and marine resources and of the causes of their deterioration. Participation by the public and citizens groups in environmental planning and management needs to be encouraged.

D. Promoting integrated coastal zone management

70. Coastal natural resources should not be conceived only as a supplier of revenue transferable to other sectors with high environmental and social trade-offs. The achievement of integrated coastal management should be the joint responsibility of State and society. Thought should be given to setting up innovative networks with full environmental considerations between activities and users such as fisheries, industries and touristic services in order to create a social dynamic that involves the active participation of the coastal communities as well as new schemes of financing for environmentally sound projects. A fundamental requirement to heighten the efficiency of this proposal is to bring the State closer to the citizen through political, administrative and economic decentralization.

71. There is a need for mechanisms (e.g., international guidelines) that would foster the application of basic elements of environmental protection and management in coastal zone development activities world wide. These elements will be consistent with the principles, policies and goals that constitute the strategy for the protection and rational use of the marine environment as a whole. The implementation of these guidelines should of course take into account regional conditions. Regional co-operation must become a part of marine management plans for all countries with shared coastal waters.

72. There is a need to integrate coastal and marine management into the framework of national development planning. Specific measures required for integrated coastal and marine zone management might include (a) preparation of resource inventories; (b) zoning, impact assessment and standards development; (c) review and development of relevant legislation; (d) public participation in the planning process; (e) introduction of incentives and disincentives; (f) integrated watershed management to control imputs to coasts; (g) procedures for conflict resolution; (h) habitat rehabilitation; and (i) design and conduct of monitoring programmes.

73. All coastal States should be encouraged and, where necessary, assisted to establish the policies and institutional arrangements that will ensure that uses of coastal areas, and the natural systems which support them, are sustainable in the long term.

E. Marine pollution control strategies including land-based sources

74. A comprehensive framework for the protection and management of the marine environment might be considered for adoption by Governments as a global declaration. This would recognize the linkages between human activities of all kinds and pollution of the marine environment by substances and wastes and their dispersion patterns. Its adoption would have major strategic importance in guiding the development of existing and new instruments for marine environmental protection at the national, regional and global levels.

75. Additional support is needed for many existing programmes such as the regional and global agreements co-ordinated by IMO, the regional agreements of UNEP, IOC and FAO and the programmes undertaken in connection with the United Nations Convention on the Law of the Sea. Specific measures are needed to assist countries in implementing requirements for waste reception facilities in ports and in improving preparedness and response to marine emergencies. There is a need to enhance capacity at the international and national levels in order to identify new pollutants quickly, to assess their potential impact and advise on actions required to control and abate them. This requires enhanced intersectoral co-operation. Financial strategies need to be considered carefully to find the correct balance between the "polluter pays principle", the contribution to be made by public funds and other innovative financial systems.

76. The framework could be drafted to reflect the principles adopted from the 1972 Stockholm Conference, 3/ the 1983 Convention on the Law of the Sea and the recommendations of the 1987 report of the World Commission in Environment and Development, 4/ the 1990 Bergen Conference 5/ and associated policy elements that address inter alia the need for resource inventories, environmental impact assessments, precautionary approaches to development and environmental management and the adoption of the "polluter pays principle". These policy elements constitute in effect a set of management guidelines to facilitate the rational use of the marine environment without damage to human health, renewable reosurces amenities or ecosystems.

77. Given the wide diversity in the nature and sources of pollutants originating on land, a variety of actions are needed to control the different types and quantities of discharges, including point and non-point sources, river outflows and materials transported through the air into the sea. The separation of different types of wastewater (industrial from domestic) to facilitate their disposal, treatment or reuse needs to be encouraged.

78. Action is also required for the treatment and disposal of human wastes and discharges from agriculture, forestry, aquaculture, industry and human settlements. This is clearly linked to the issue of land-based sources of pollution and to the prospective meeting in Halifax, Canada, as referred to earlier in this document. The main anticipated results of the meeting are as follows:

(a) Development of principles for the protection of the marine environment from land-based sources;

(b) Study of the various scientific, social, economic and legal elements to be addressed if there is to be a concerted global attack on the problem;

(c) Development of a recommended strategy and action plan.

79. Finally, the effectiveness of marine environmental protection policies and programmes needs to be evaluated periodically by independent (non-governmental) auditing bodies.

F. Promoting sustainable management of living marine resources

80. National fisheries and environmental ministries need to be strengthened. Efforts should be made to co-ordinate their policies and to improve collaboration on routine aspects of protection, management and assessment of marine living resources. Greater effort is needed to reinforce institutional systems designed to improve knowledge of the state of the marine environment, fisheries statistics and information about stock potentials.

81. A major international effort is needed to improve and control the rational management of fisheries beyond 200-mile limits for many species and in many areas of the world. The importance of the entry into force of the United Nations Convention on the Law of the Sea in reinforcing the global network for negotiating fishing rights as well as in stimulating an increase in the relative catches of developing countries, should be stressed. Guidelines need to be developed for the proper implementation of the Convention on the Law of the Sea and for responsible fishing on the high seas. Regional fisheries bodies need to be made more effective, and more formal mechanisms may be needed for them to report to the FAO Council on Fisheries. It also seems appropriate to develop management codes of practice regulating fisheries on the national, regional and global levels.

82. Living marine resources need to be fully considered in developing and applying conventions for the conservation of genetic resources (biodiversity). Environmental issues (including environmental impact assessments) need to be included in fisheries training and education programmes for the benefit of fisheries managers and extension officers. Multidisciplinary training is particularly vital for small island countries with limited staff.

83. A world-wide effort is required to reduce extraction rates of target species and incidental mortality of non-target ones. Guidelines are needed for responsible fishing in the high seas and coastal areas. Governments should adjust economic incentives and disincentives to control the fishing effort and reduce the tendency to overinvest in fisheries.

84. Coastal fisheries and resources need to be managed within the broader framework of integrated coastal zone management, and environmental impact assessments should be systematically undertaken for new fishery and aquaculture developments.

G. Conservation of living marine resources

85. The protection of marine living resources requires considerable changes in the approach to planning and regulating systems. Further conservation measures are needed for endangered marine species such as marine mammals and turtles. More marine protected areas are required to protect biological diversity, improve fisheries management and ensure the survival of critical habitats and sensitive areas.

86. Conservation of seagrasses, mangroves and coral reefs need to be implemented through coastal planning. Interdependency of fish species on these ecosystems need to be fully acknowledged in national and regional programmes.

87. A strategy for the conservation, rational use and sustainable development of the high seas is also needed. Technological research is required to develop more selective fishing gear, improve identification and safety and reduce the danger of "ghost fishing" by lost gear. Antarctic scientific research is vital to an understanding of changing global environments and for the preservation of unique living marine resources.

H. Impacts of climate change

88. Understanding the nature and effects of climate change on the dynamics of the oceans will depend greatly on systematic monitoring of ocean/atmosphere interactions and oceanic processes on the global and regional scales. Forecasting the impacts of such changes in coastal environments, productivity and human activities will require an understanding of the relationship between coastal oceanography, geomorphology, resource abundance and exploitation. This is a prerequisite to improved prediction of climate-mediated ocean changes and to the formulation of appropriate policies, regulatory and managerial actions at national and international levels.

89. A crucial requirement is to complete the global coverage of monitoring networks with new data from extensive ocean areas where data are not presently gathered for meteorological purposes.

90. The development of national capabilities and capacities, both for studying ocean/climate relationships and for responding to the knowledge obtained, will require great investment in training, the provision of technical and financial assistance and greater participation in multilateral regional and global programmes.

I. Possible areas for further regulatory action at the international level

91. Possible areas for further attention by the international community with a view to adopting new legal measures include:

(a) Pollution control from land-based, from or through the atmosphere, from off-shore exploration and exploitation of mineral resources and transboundary disposal of wastes;

(b) Protection of marine biodiversity: living resources and critical habitats;

(c) Expansion of regional co-operation in existing regional schemes and promotion where relevant, of ocean-wide collaboration.

J. Strengthening of existing institutions, instruments and mechanisms at the international level

92. There is a need for a detailed analysis of the institutional and legal requirements for coastal and ocean governance for the coming century. This implies the strengthening of existing institutions and legal instruments but also innovative and integrative mechanisms. The integration of the marine sector into development strategies require both horizontal and vertical efforts. National, regional and international frameworks will have to be compatible to be able to interact. Specific measures for strengthening the existing institutions, legal instruments and mechanisms need to be identified.

93. The improvement of legal arrangements for the preservation of polar regions, including Antarctica needs to be addressed.

K. London Dumping Convention

94. By resolution LDC.40 (13) the Thirteenth Consultative Meeting noted, inter alia, that land-based sources of pollution constituted the major threat to the marine environment and agreed that the UNCED Preparatory Committee should recommend to the 1992 Conference that the following actions be taken:

(a) A global mechanism to co-ordinate the protection of the marine environment from pollution from all sources should be considered, reference being made to activities giving rise to marine pollution;

(b) A global instrument, as well as new or improved regional agreements, for the prevention, reduction and control of land-based sources of marine pollution should be considered, reference being made to the possible form that such an instrument could take;

(c) States and international forums should pursue a precautionary approach in addressing waste management problems by, inter alia, focusing on environmentally preferable land-based alternatives to sea disposal while ensuring that pollution was not transferred to other parts of the environment via other disposal routes;

(d) National, regional and global forums should actively pursue the elimination of marine pollution through, inter alia, more stringent national and regional controls and the active pursuit of clean production methods;

(e) All States that have not yet done so should ratify or accede to the London Dumping Convention.

95. The resolution urges the Preparatory Committee to address diligently the need for all States to be able to contribute in the pursuit of the objective of a clean marine environment. International agencies, Governments and the private sector should be encouraged to take expeditious steps to strengthen the mechanisms for providing co-operation, transfer of technology and assistance that would improve the capacity of developing countries to implement the measure contained in the resolution.

L. Action on the Global Ocean Observing System

96. The proposed system needs to be co-ordinated through an intersecretariat co-ordination group (IOC, WMO, UNEP, FAO) and incorporated into comprehensive arrangements for a global climate observing system. The second World Climate Conference recommended the establishment of a coastal monitoring system for climate change. Nevertheless, the full and effective implementation of the system will require acceptance of the need for close integration of contributory programmes and increased national participation in these programmes. The need to extend the range and geographical scale of measurements and observations implies that increased financial resources will be required if the overall objectives of GOOS are to be achieved.

97. In the long term, the system will require the establishment of operational oceanographic services at the national level. All coastal States need to be involved both to ensure the success of the observation system and to obtain the benefits it can provide. Substantial assistance will be needed by developing countries in data analysis and interpretation, as well as in the application of data products. An international assistance programme in this area would demonstrate the value of GOOS and thereby encourage greater commitment of national resources in support of the system.

Notes

1/ Official Records of the General Assembly, Forty-fifth Session, Supplement No. 46 (A/45/46).

2/ A/CONF.151/PC.31.

3/ Report of the United Nations Conference on the Human Environment, Stockholm, 5-16 June 1972 (United Nations publication, Sales No. E.73.II.A.14 and Corr.1).

4/ A/42/427, annex.

5/ A/CONF.151/PC/10.